2004

Hawaii State Practice Recommendations for

DIABETES MELLITUS

INTRODUCTION

The Hawaii State Diabetes Task Force, a volunteer committee of professionals in the field of diabetes, is pleased to announce the publication of the ***2004 Hawaii State Diabetes Practice Recommendations for Diabetes Mellitus***. Originally developed in 1998 and updated in 2002, this version reflects revisions to the processes of care which have come to pass since the previous publication. Also new to this version is the addition of five wholly novel topic areas: depression, disability, gestational diabetes, prediabetes, and physical activity.

These recommendations are summarized on a detachable poster; however, when further detail or explanation is required regarding a procedure, a citation is made to an appendix. Providers are encouraged to remove and post the summary table in a highly viewable area within his/her practice.

These guidelines do not address all the care a patient with diabetes may need, nor should they override good clinical judgment in the care of any individual patient. Rather, these recommendations focus on procedures which form the basis of providing good medical care to people with diabetes. They are intended to assist health care providers in delivering quality medical care to people with diabetes. Therefore, it is the hope of the Task Force that practitioners will make these procedures, at minimum, routine in their care of patients with diabetes.

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APPENDIX A - Practicing the ABC's of Diabetes Management

A1C

While the American Association of Clinical Endocrinology's (AACE) recommended goal of < 6.5% is lower than the American Diabetes Association's goal of < 7.0%, the benefits of tighter control warrant the stricter recommendation; however, the risks of hypoglycemia, weight gain, and co-existing medical conditions should be considered in designing individual treatment regimens and goals.

CATEGORY OF PATIENT	RECOMMENDED PROCEDURE	SCHEDULE
< 7.0% Lower risk	A1C	Every 6 months
≥ 7.0% HIgher risk	1) A1C 2) Assessment and management of specific behavioral and physiological reasons for poor control.	Every 3 months

BLOOD PRESSURE

	BLOOD PRESSURE	
	SYSTOLIC	DIASTOLIC
Goal (mmHg)	< 130	< 80
Goal (mmHg) with diabetic nephropathy	< 125	< 75
Behavioral therapy alone (maximum 3 months) then add pharmacologic treatment if goal not met.	130 - 139	80 - 89
Behavioral therapy and pharmacologic treatment	≥ 140	≥ 90

Early detection and treatment of hypertension decreases the risk of cardiovascular complications of diabetes. The risk reduction in cardiovascular events and deaths with blood pressure reduction is substantially greater in patients with diabetes than in the general population, and so it should be stressed as one of the most important interventions in type 2 diabetes. All patients should have a target blood pressure of **below 130/80** unless contraindicated.

Low dose **thiazide diuretics, angiotensin converting enzyme (ACE) inhibitors**, and **angiotensin II receptor blockers (ARB)** provide special advantages in the treatment of hypertension in people with diabetes, but most patients will require **two or more** antihypertensive agents to achieve the blood pressure goal. The specific medication used appears to be less important than the achievement of the lower blood pressure goal.

CHOLESTEROL (Lipid Profile)

	MEDICAL NUTRITION THERAPY		DRUG THERAPY	
	INITIATION LEVEL	LDL GOAL*	INITIATION LEVEL	LDL GOAL*
With CHD, PVD, or CVD	≥ 100	< 100	≥ 100	< 100
Without CHD, PVD, or CVD	≥ 100	< 100	≥ 130	< 100

LDL cholesterol lowering
- First choice: HMG CoA reductase inhibitor (statin)
- Second choice: Bile acid binding resin (resin) or fibrates

HDL cholesterol raising
- Behavioral interventions such as weight loss, increased physical activity, and smoking cessation may be useful
- Difficult except with fibrates or nicotinic acid, which should be used with caution

Triglyceride lowering
- Glycemic control first priority
- Fibrate (gemfibrozil, fenofibrate)
- Statins are moderately effective at high dose in hypertriglyceridemic subjects who also have high LDL cholesterol

Combined hyperlipidemia
- First choice: Improved glycemic control plus high-dose statin
- Second choice: Improved glycemic control plus statin plus fibrate (gemfibrozil, fenofibrate)
- Third choice: Improved glycemic control plus resin plus fibrate (gemfibrozil, fenofibrate)
- Improved glycemic control plus statin plus nicotinic acid (glycemic control must be monitored carefully)

**Lipid-associated risk for cardiovascular disease is graded and continuous; more aggressive treatment may be indicated for high-risk individuals.*

APPENDIX B - Screening for Complications

COMPLETE FOOT EXAM

Early detection and management of diabetic neurovascular foot complications have been shown to decrease the incidence of diabetic foot ulcers and lower limb amputations.

CATEGORY OF PATIENT	RECOMMENDED PROCEDURE	SCHEDULE
0 No loss of protective sensation (LOPS)	1) Visual exam with shoes and socks off by MD, RN, or trained personnel. 2) Complete exam including visual inspection, neurovascular examination, and risk categorization. 3) Discuss appropriate footwear.	1) At all regularly scheduled diabetes visits. 2) Annually and with each new abnormality.
1 LOPS	1) Complete exam as above. 2) Soft insoles. 3) Discuss appropriate footwear.	At all regularly scheduled diabetes visits.
2 LOPS Pressure (callus/ deformity) or decreased circulation	1) Complete exam as above. 2) Speciality care by podiatrist, orthopedic surgeon, vascular surgeon, or physiatrist experienced in the management of diabetes. 3) Custom insoles. 4) Prescription footwear.	1) At all scheduled diabetes visits. 2) Every 3 - 4 months.
3 LOPS Plantar ulcer (or history), or neuropathic fracture	Same as Risk Category 2	As above. More frequent specialty care prn.

EARLY NEPHROPATHY DETECTION

If microalbumin or gross proteinuria is detected and confirmed, begin treatment with ACE inhibitor (type 1); ACE inhibitor or ARB (type 2). Early detection of diabetic nephropathy can lead to treatment interventions and improved glycemic control, which have been shown to retard the progression of renal disease even in normotensive patients.

CATEGORY	RECOMMENDED PROCEDURE	SCHEDULE
Persons with type 1 or type 2 diabetes	**Option 1:** A two-step screening for proteinuria: a) Standard urinalysis or dipstick to determine gross proteinuria† b) For those negative for gross proteinuria, test for microalbuminuria†*. **Option 2:** Test for microalbuminuria†*. *†Exclude transient causes and verify.* **If positive for microalbuminuria, see figure on next page.*	**type 1:** Start 5 years after diagnosis, then annually **type 2:** Annually beginning at diagnosis.

Because of variability in urinary albumin excretion, two of three specimens collected within a 3 to 6 month period should be abnormal before considering a patient to have crossed one of these diagnostic thresholds. Exercise within 24h, infection, fever, congestive heart failure, marked hyperglycemia, and marked hypertension may falsely elevate urinary albumin excretion.

FIGURE 1. Screening for Microalbuminuria

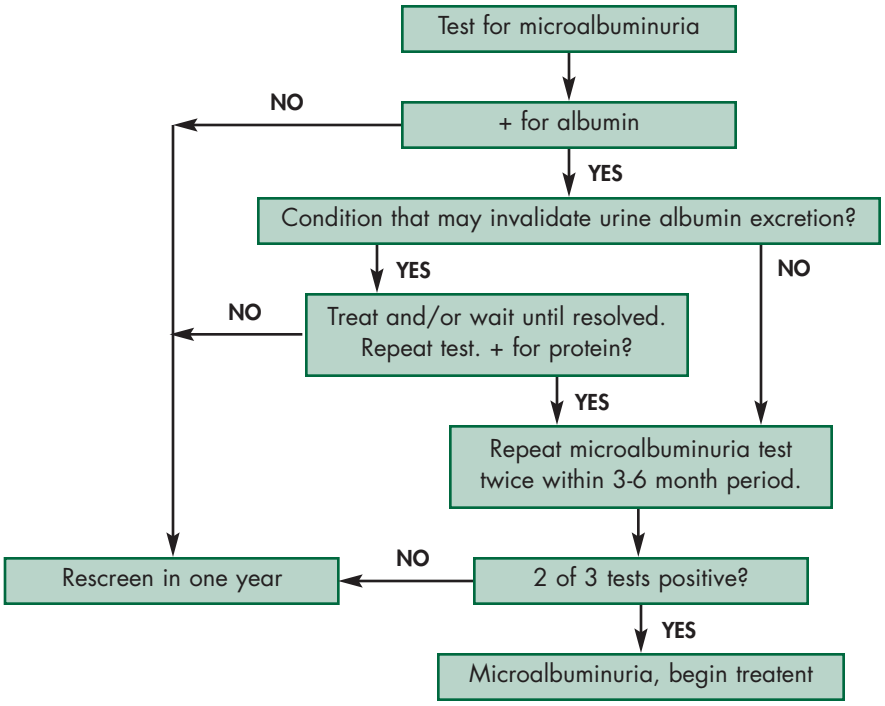

TABLE 1. Definitions of Abnormalities in Albumin Excretion

CATEGORY	24-H COLLECTION	TIMED COLLECTION	SPOT COLLECTION
Normal	<30 mg/24 h	< 20 mcg/min	<30 mg/g creatinine
Microalbuminuria	30-300 mg/24 h	20-200 mcg/min	30-300 mg/g creatinine
Clinical Albuminuria	>300 mg/24 h	>200 mcg/min	>300 mg/g creatinine

DEPRESSION SCREENING

People with diabetes are two to three times more likely to experience depression compared to the general population. Depression in people with diabetes is significantly associated with poorer glycemic control. As a result, they are at an increased risk for diabetes-related complications. Furthermore, co-morbid depression and diabetes is associated with functional disability, low work productivity, low health service use, and more frequent and lengthier hospital stays. Successful treatment of depression in people with diabetes can improve glycemic control and overall quality of life.

RECOMMENDED SELF-REPORT DEPRESSION INSTRUMENTS INCLUDE:

DEPRESSION INSTRUMENT	HOW TO ORDER
HADS Hospital Anxiety and Depression Scale (only the 7-item depression subscale)	NFER-Nelson Publishing Company, Ltd. Darville House 2 Oxford Road East Windsor, Berkshire, SL4 1DF, U.K. Phone: 011 44 1753 858 961
Prime-MD Primary Care Evaluation of Mental Disorders (9-item scale)	Contact Pfizer Inc.
BDI-PC™ Beck Depression Inventory™ – PC (7-item short-form)	The Psychological Corporation, 1-800-221-8378
HDI Hamilton Depression Inventory (9-item short-form)	Contact SmithKline Beecham.
HANDS™ (10-item scale)	Screening for Mental Health One Washington St., Ste 100 Welesley Hills, MA 02481-1706
Zung SDS Zung Self-Rating Depression Scale (20-item scale).	GlaxcoWellcome – download from: www.wellbutrin-sr.com/eval/zung.htm.

**The depression instruments above are available for use free-of-charge (except the BDI-PC and HANDS).*

A referral to a behavioral health specialist should be made when the patient scores within the depression range for a particular depression instrument (e.g., a score ≥5 on the Prime-MD would warrant a referral).

Behavioral health specialists include:
- Health psychologists
- Psychiatrists
- Behavioral medicine specialists
- Mental health/medical social workers

Treatment options for depression could include:
- Use of a selective serotonin reuptake inhibitor (SSRI).
- Psychological interventions (e.g., cognitive-behavioral therapy).
- Combination of psychopharmacologic and psychological interventions.

APPENDIX C - Preventive Measures

ASPIRIN PROPHYLAXIS

Low-dose aspirin therapy is effective in reducing cardiovascular events in persons with diabetes who have known cardiovascular disease or additional risk factors for cardiovascular disease.

RISK CATEGORY	PROCEDURE	FREQUENCY
Secondary Prevention Persons with type 1 or type 2 diabetes with coronary artery disease, cerebrovascular disease, or peripheral vascular disease.	Start low-dose ASA prophylaxis (75 - 162 mg) unless contraindicated	At onset, or documentation of positive past history of coronary artery disease, cerebrovascular disease or peripheral vascular disease
Primary Prevention Persons with type 1 or type 2 diabetes with additional cardiovascular risk factors.*	Start low-dose prophylaxis (75 - 162 mg) unless contraindicated.	At onset of cardiovascular risk factors.
Persons with type 1 or type 2 diabetes 40 years of age or older.	Start low-dose prophylaxis (75 - 162 mg) unless contraindicated.	Beginning at age 40 years.

**Age ≥ 40 years, family history of cardiovascular disease, hypertension, smoking, dyslipidemia, or albuminuria (≥ 30 mg/24 hours).*

TOBACCO USE ASSESSMENT

For more information on smoking cessation resources, see the Hawaii Department of Health's CleanBreak Toolkit, including *Cessation Resources in Hawaii* and the *Hawaii Cessation Handbook*. Call the DOH Tobacco Prevention and Education Program at 808-586-4613.

APPENDIX D - Diabetes Education & Self-Management Training

DIABETES EDUCATION

Diabetes Self-Management Education (DSME) is defined as an interactive, collaborative and ongoing process involving the person with diabetes, family members, care providers, and the educator, preferably a certified diabetes educator (CDE). Diabetes education is an integral part of the treatment plan of people with diabetes.

The goals of diabetes education include:

- optimization of metabolic control
- prevention of acute and chronic complications
- an optimum quality of life

The process of diabetes education includes:

- assessment of individual's specific learning needs
- identification of the individual's specific diabetes self-management goals
- education and behavioral interventions based on patient's values, beliefs and culture, and directed toward helping the individual achieve identified goals
- evaluation based on outcome criteria

In order to successfully achieve the goals and outcomes of diabetes education, national standards have identified the following content areas, which should be assessed to determine individual learning needs of each patient with diabetes:

- Describing the diabetes disease process and treatment process
- Incorporating appropriate nutritional management into lifestyle
- Incorporating physical activity into lifestyle
- Utilizing medication (if applicable) for therapeutic effectiveness
- Monitoring blood glucose and urine ketones, as appropriate, and using the results to improve control
- Preventing, detecting and treating acute complications
- Preventing (through risk reduction behavior), detecting, and treating chronic complications
- Goal setting to promote health and problem solving for daily living
- Integrating psycho-social adjustment into daily life
- Promoting pre-conception care, management during pregnancy, and gestational diabetes management (if applicable)

Medicare pays for 10 hours of DSME upon diagnosis, the initial hour for individual assessment of training needs and the remaining 9 hours for group sessions or individual training if deemed necessary by provider / educator. Qualified beneficiaries are allowed 2 hours of follow-up training per year if so ordered by the patient's primary care provider. Reimbursement can only occur if services are provided at an facility with an ADA-recognized program.

MEDICAL NUTRITION THERAPY

Many medical conditions and illnesses can be managed, improved, and even corrected by a specific diet. Medical Nutrition Therapy (MNT) services are nutritional diagnostic, therapy and counseling services for the purpose of disease management. MNT is a key component of diabetes care and is a Medicare Part B benefit for eligible patients if provided by a Registered Dietitian. MNT should seek the following goals:

- Provision of individualized meal planning advice and guidelines to accommodate lifestyle, age, and overall health status.
- Balancing food intake with drug therapy and exercise.
- Optimal nutrient intake for control of glycemia and co-morbidities such as obesity, hyperlipidemia, renal impairment, and hypertension.
- Nutrient goals:
  - 10% to 20% of calories from protein with normal renal function. With microalbuminuria or nephropathy, reducing protein to 0.8 - 1.0 g/kg body weight/day may slow the progression of nephropathy.
  - ≤10% calories from saturated fat, minimize trans fats
  - ≤10% of calories from polyunsaturated fat
  - 60% to 70% of calories from monounsaturated fat and carbohydrate
  - < 300 mg cholesterol per day
  - ≤2400 mg sodium daily for hypertension

SELF-MONITORING OF BLOOD GLUCOSE

GLYCEMIC GOALS FOR SELF-MONITORING OF BLOOD GLUCOSE (SMBG)

GLUCOSE GOALS IN NON-PREGNANT ADULTS

FASTING AND PREPRANDIAL (before meals)	POSTPRANDIAL (after start of meal)
Plasma (Capillary) Glucose Goals (mg/dl): 90 - 130 mg/dl	1 to 2-h postprandial: < 180 mg/dl
Whole Blood Glucose Goals (mg/dl): 80 - 120 mg/dl	1 to 2-h postprandial: < 160 mg/dl

FREQUENCY: Frequency and timing of SMBG should be individualized for each patient based on clinical circumstances, type of treatment, and treatment response so that the risks for both hyper- and hypoglycemia are minimized. More frequent testing is indicated with changes in therapy, activity level, and/or meals; when hypoglycemia is suspected; on travel days; or on sick days.

POSTPRANDIAL MONITORING: Postprandial monitoring may be targeted if A1C goals are not met despite reaching preprandial glucose goals, or if treatment is specific for postprandial control.

LESS STRINGENT TREATMENT GOALS: Less stringent blood glucose goals may be appropriate for patients with a history of severe hypoglycemia, patients with limited life expectancies, very young children or older adults, and individuals with comorbid conditions.

PHYSICAL ACTIVITY

Patients with diabetes considering moderate- or high-intensity exercise should be evaluated for the impact of such exercise on microvascular and macrovascular complications. Glucose levels, especially in type 1 patients, should be monitored closely before and after exercise.

APPENDIX E - Women and Diabetes

PRECONCEPTION COUNSELING

CATEGORY OF PATIENT	RECOMMENDED PROCEDURE	SCHEDULE
Woman with type 1 or type 2 diabetes	Preconception counseling to include: 1. Assessment and optimization of glucose control. The goal for preconception A1C is within 1% of normal. 2. Evaluation of macrovascular and microvascular complications including a dilated eye exam. 3. Cardiac risk factor evaluation including ECG in women with significant risk factors or in women with diabetes longer than 10 years. 4. Family planning method. 5. Potential risks to fetus and mother. 6. Education regarding importance of preconception control of blood glucose and blood glucose goals during pregnancy. 7. Medication change in women pregnant or planning a pregnancy to include discontinuing ACE inhibitors, and ARBs and substituting insulin for oral medications.	Counseling should occur when the young woman with diabetes reaches childbearing age, or as an adult, during the first visit, and when a woman expresses interest in planning a pregnancy.

GESTATIONAL DIABETES

SCREENING PROTOCOL FOR GESTATIONAL DIABETES

PREGNANT	POSTPARTUM
• 1-hour post-50 g challenge at 24 to 28 weeks' gestation. If ≥140 mg/dl, subsequent 3 hour 100 g GTT confirmation (two values above FPG 95 mg/dl, 1 hour 180 mg/dl, 2 hour 155 mg/dl, and 3 hour 140 mg/dl). • Previous gestational diabetes: 50 g oral glucose screening at time of pregnancy diagnosis. If < 140 mg/dl, repeat at each trimester. If positive, perform 100 g glucose challenge. Referral and treatment if abnormal.	• Fasting plasma glucose (ADA) or test with standard 75 g oral glucose tolerance test (ACOG, Canadian Obstetrical Association) at ≥ 6 weeks' postpartum.

APPENDIX F - Emerging Issues

PREDIABETES

Prediabetes is an emerging concept addressing patients at risk of developing diabetes (e.g., those with impaired fasting glucose and/or impaired glucose tolerance, and family history, obesity and inactivity, metabolic syndrome, history of gestational diabetes, and/or polycystic ovary syndrome) who are also at high risk for cardiovascular disease. Efforts should be made to prevent the emergence of diabetes by exercise and diet and to reduce cardiovascular risk factors.

DISABILITY

Disabilities are more prevalent among people with diabetes than among those without diabetes (estimated prevalence is 20% to 50%). Though disabilities may or may not be directly related to the diabetes, most disabilities impact one's ability to carry out some of the self management skills required for optimal diabetes control.

Examples of disabilities include, but are not limited to, amputation of all or part of a limb, blindness, deafness, low vision, hemiparesis, learning disabilities, manual neuropathy, mental retardation or developmental disabilities, and serious mental illness. The needs assessment for disabilities should also include physical and psycho-social factors including age, mobility, visual acuity, hearing, manual dexterity, alertness, attention span, and ability to concentrate.

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A1C

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